Comprehensive Assessment of the City's Deferred Maintenance Liability and Funding Needs for Budgeting – Updated November 2010

Background and Purpose

The city has released its assessment of the citywide deferred maintenance backlog, noting over $1 billion in deferred maintenance needs. This backlog is combined with a funding plan through FY 2013, with the majority of funding scheduled to be applied every other year through bonds issued by the city.

Furthermore, the City Auditor has released a report on one of the three main components of the city's acknowledged deferred maintenance backlog: streets. The Auditor's report highlights many aspects of the city's street maintenance and repair operations requiring improvement, concluding that the strategy employed by the city could cause the "costs of maintaining streets [to] greatly increase over the long term should deferred maintenance needs not be strongly addressed." The audit also documents that opportunities for improvement exist within the streets division that would allow for the most efficient use of budgeted funds for the maintenance and deferred maintenance related to streets.

While the attention and priority to the deferred maintenance liability displayed by this planned level of funding is commendable, the city currently has not identified the annual deterioration trend associated with the size of its comprehensive backlog, as well as the dynamic impact to the backlog of planned deferred maintenance funding. [1]

This concept is not new. In fact, it has been espoused since at least February of 2002, when the Blue Ribbon Committee on City of San Diego Finances opined on the need to make comprehensive information on the city's regular and deferred maintenance needs "available on call for budgetary decisions."[2]

This endeavor seeks to build on the momentum established by the city's most recent update of its deferred maintenance backlog, as well as the City Auditor's review of street maintenance and repair, in an attempt to implement a fiscally sound budgetary tool that determines the annual funding needs related to maintenance of the city's assets. Additionally, the analysis is intended to acknowledge the impact of both funding and deferring maintenance in budgetary terms, to provide for a clear indication of the impact of budget allocation decisions related to maintenance.

Applying this budget-oriented approach to a liability such as routine and deferred maintenance supplements the results of actions such as the audit of city street maintenance. The implementation of recommendations from such an audit is important, because viewing the city's liabilities from a budget approach only sheds light on the efficient allocation of funds among different types of asset classes. It does not deal with the efficiency of expenditures following the allocation of funds.

The primary purpose of this exercise is to establish the following:

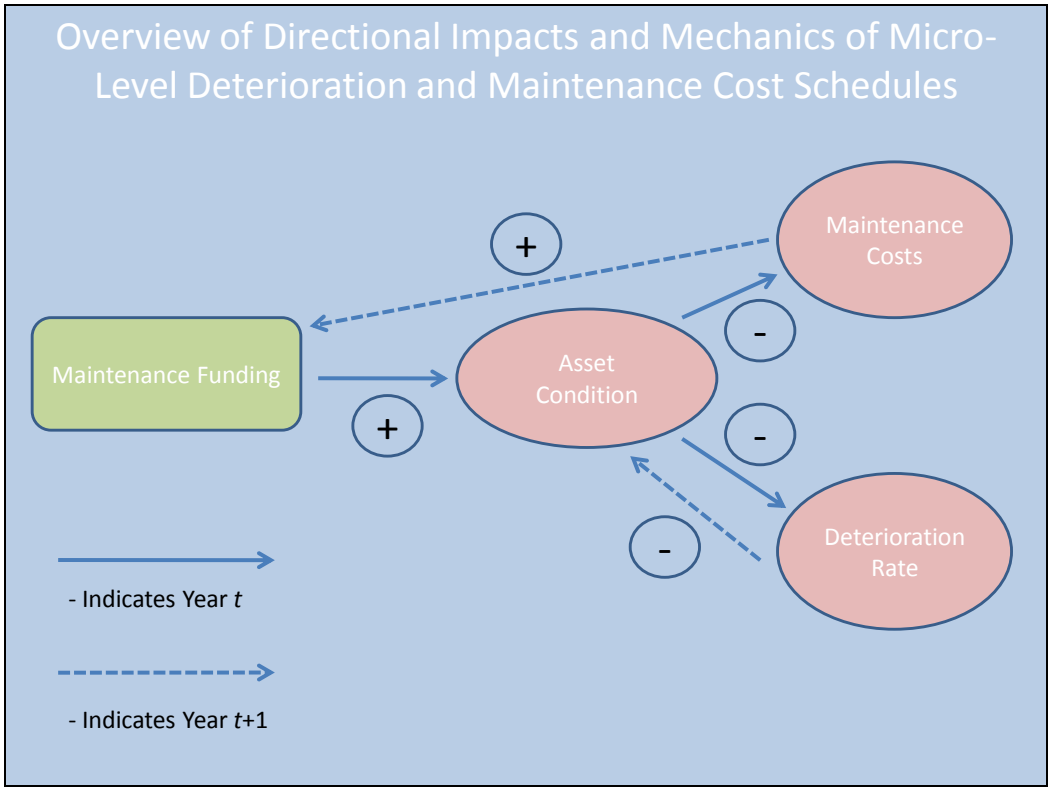
- An accurate, overall rate of the size and aggregate growth rate of the city's deferred maintenance backlog, subject to a range of funding applications. (Essentially, the net impact of an array of funding allocations to the backlog.)

- Establishing the amount of needed routine maintenance of the city's assets, as well as the corresponding funding requirement - equivalent to "normal cost."

[1] See Memorandum issued by Councilman DeMaio entitled "Updating the City's Five-Year Financial Forecast." 8/17/09.
[2] *Blue Ribbon Committee Report on City of San Diego Finances*. February, 2002. Pgs. 24-27.

Furthermore, after establishing the annual funding required to prevent the backlog from growing, this model will provide the city with a tool to help plan for budgetary allocations that will achieve the city's goals in reducing its maintenance backlog. By applying a strategic and data-driven approach toward the level of funding allocated for regular and deferred maintenance, long-term maintenance costs will be minimized due to the maximization of asset lifecycles through proper upkeep, providing taxpayers with the best possible value. In order to accomplish this goal, however, the required level of funding, and the impact of inadequately funding the liability represented by maintenance needs, must first be understood.

Theoretical Foundation: Asset Lifecycle, Deterioration and Maintenance Funding Requirements/Impacts



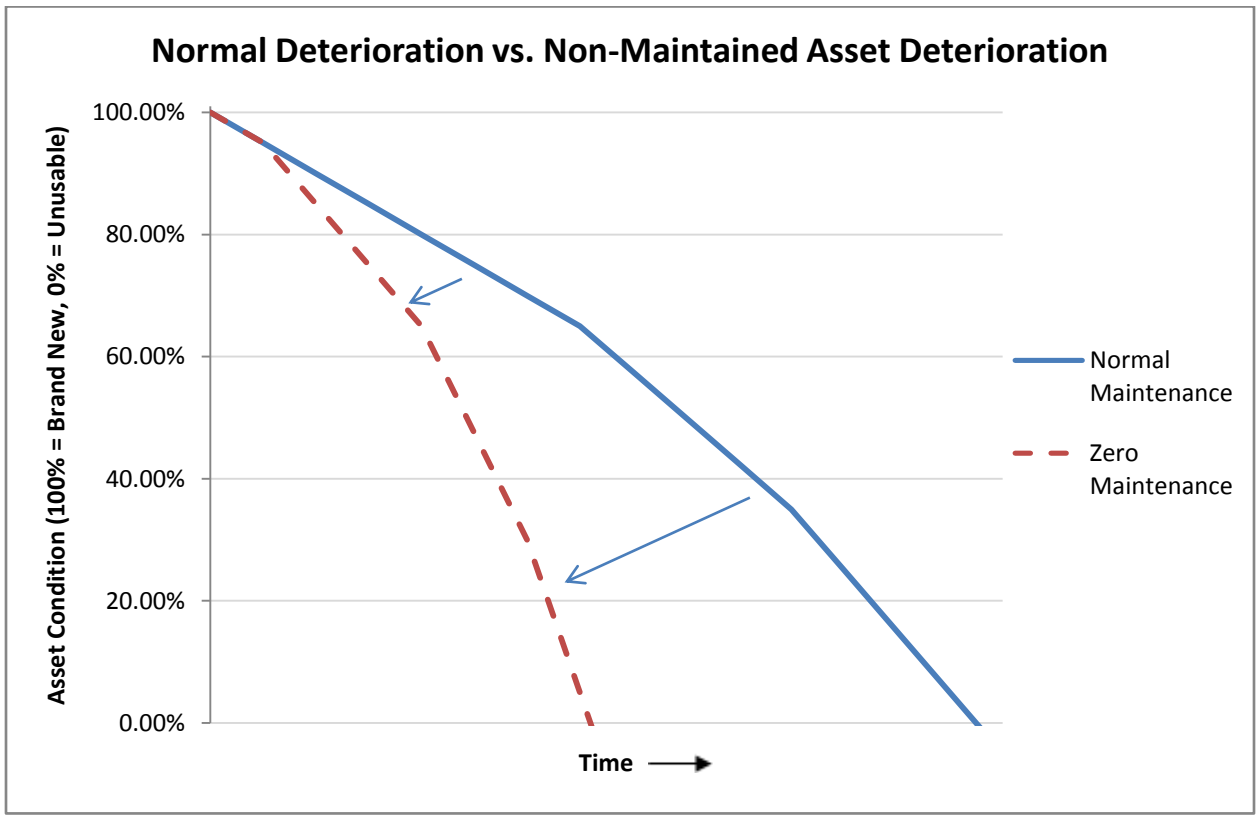
The flowchart above depicts the relationship between various aspects of the deferred maintenance issue. The proposed model accordingly assumes the interactions depicted above between condition, deterioration rates, costs and units of measurement. However, the *magnitude* of these interactions will likely vary for each asset and type of asset.

As an example of the relationships illustrated by the flowchart above, a positive sign (+) between two items implies a positive relationship. For example, the positive relationship between "Maintenance Funding" and "Asset Condition" suggests that all else equal, as maintenance funding is increased, the condition of the asset is impacted positively.[3]

Note that assets are in a constant state of deterioration, and as a result, maintenance funding may simply prevent the asset from deterioration that otherwise would have occurred. This is displayed more prominently in the graph below.

[3] Such relationships are also subject to limitations. For instance, an asset's condition can likely never exceed brand new, 100% condition.

The lifecycle graphs provided below represent two potential "book-end" scenarios, with the solid blue line representing the useful life of an asset that is maintained, while the dotted red line represents the useful life of an asset not maintained.



<u>Issue #1</u>: Incomplete Asset and Backlog Accounting

The Public Works report specifically states that items such as sidewalks are not included in the recent deferred maintenance assessment. Other excluded items (ignoring Enterprise Fund assets) may include parking lots and alleys. Fully accounting for all of the existing deferred maintenance – i.e. comprehensively identifying the total liability – is of vital importance from a strategic budgetary standpoint, as an underestimation can have an increasingly greater impact from year to year.

Using an overly simplistic example, suppose that the cost of reducing a given maintenance backlog (assuming that further routine maintenance in Years 1 – 5 is <u>not</u> deferred) increases by 5% per year due to deterioration. In this case, a backlog of $100 in Year 1 will increase to $121.5 by Year 5. In other words, the cost to simply eliminate the outstanding liability has increased by $21.5 over the time period in question.

Running the exact same cost escalation for a $75 backlog provides an outstanding balance of $91.2 in Year 5. Not only is the true backlog still not realized, but the cost solely attributable to delaying the elimination of the backlog is underestimated. As identified above, allowing the backlog to continue to accrue due to deterioration provided a delta of $21.5. However, underestimating the original backlog by 25% provided a delta of $16.2 in terms of recognizing the outstanding liability.

Why is the difference between deltas ($5.39, or 33%) significant? In the case of the City of San Diego, the backlog is not $100, but over $1,000,000,000. Converting the original $100 into $1 billion means that the 25% underestimation in the example above caused a corresponding underestimation of the cost of deterioration by $53.9 million. This underscores the need to comprehensively identify the backlog.

Development of the Model

For budgeting purposes, we propose a model that presents final figures that represent as many city assets as possible. Each major bullet point below would represent a final component for presentation to decision-makers, while the minor (unfilled) points represent the calculations or tasks needed to produce the final components.

- An annual estimate of "normal cost" maintenance (i.e. the cost of performing the maintenance required on assets due to deterioration from that given year.)
    - Streets
    - Storm Drains
    - Facilities
    - Others?
- An annual calculation of the amount of funding required to avoid growth of the maintenance backlog, expressed in terms of cost.
    - Deterioration rate (expressed in terms of cost) of entire backlog.
        - Deterioration rates of each asset class, and where appropriate, sub-classes of assets. This concept is explored further below in the section entitled "Identification of Optimal Classes and Sub-Classes of Assets."
- An annual estimate of the balance remaining in the backlog after the application of budgeted funds.

<u>Issue #2</u>: Identification of Optimal Classes and Sub-Classes of Assets

The report issued by the Department of Public Works on June 29, 2009 identifies three asset classes comprising a combined construction cost backlog of $800 million (over $1 billion when including soft costs) for the following categories:

1) Streets
2) Storm Drains
3) Facilities

These categories each represent distinct classes of assets. Assumedly, each asset class carries with it varying rates of deterioration - thus varying rates of unattended backlog cost growth. In order to accurately identify the rate of decay for the deferred maintenance backlog as a whole, it becomes necessary to identify the decay rate for each asset class. This logic can be taken one step further: given the wide range of states of deterioration - as well as deterioration rates associated with assets - <u>within</u> each of the three classes above, the most accurate means of modeling would be to map the current condition, lifetime maintenance costs and corresponding deterioration schedule of all assets in the city's entire portfolio.

However, given the thousands of assets belonging to the city in just these three classes, accurately mapping deterioration for each and every asset is overly burdensome and likely unrealistic from an implementation standpoint, as diminishing returns for this project may set in rapidly (the marginal return being accuracy, the input being time invested). Therefore, an optimal level of detail must be determined.

Issue #2 Discussion Point: What is the optimal level of detail, given the inherent trade-off of accuracy?

- Organizational Components within an asset class:

  The backlog update report divides streets into two categories, concrete and asphalt. Furthermore, the report goes on to provide relative quantities (miles of road), the needed components, and the cost per unit of these components.

Streets Deferred Maintenance Backlog (as of June 29, 2009)			
	Asphalt	Concrete	Slurry Seal*
Miles to correct entire backlog	504	63	1260
Mile Required for Industry Standards	364	10	700
Cost per mile (FY 2009 $)	$350,000	$3,000,000	$100,000
Sub-Total Industry Standard	$127,400,000	$30,000,000	$70,000,000
Total Industry Standard	$227,400,000		

**Maintenance Item (Normal Cost Component?)*

Given the statement in the staff report that "[s]lurry seal is…a maintenance item, and the cost of the work cannot be capitalized," the backlog component representing slurry seal may or may not be zero. *(Requires further discussion and input from Public Works).*

- Deterioration Schedules and Impact of Partial Payment

  The graph below builds off of the previous schedule, expanding to show the relationship of replacement cost to these other costs.

Conveniently, the staff report provides some useful starting points for discussion of the appropriate level of detail for the Streets component of the Deferred Maintenance ARC. Combining the organizational overview provided above with the OCI status of citywide streets provided in the staff report, the following represents the initial suggestion for computing the streets component ARC:

Note that these assumptions require further discussion and input from Public Works staff that are more familiar with actual asset deterioration and are meant to only to serve as an example.

Conclusion:

We are concerned that deferring maintenance has a significant financial impact due to the liability it creates through an increased rate of deterioration. By identifying appropriate assumptions and cost relationships to an agreed upon number of asset classes throughout the city's asset portfolio, an accurate depiction of the city's deferred maintenance obligation and the budgetary ramifications can be developed for implementation in the annual budgetary process.

Such a model could ultimately resemble the methodology applied to "Normal Cost" and the amortization of the unfunded liability.

Recommendations:

- The Budget and Finance Committee should consider the issues of ongoing and deferred maintenance funding as soon as possible as part of the ongoing effort to address the City's structural budget.

- The Public Works Department should provide the Committee with a report detailing its capabilities (and that of its software programs) to develop a model for ongoing (routine) maintenance (i.e. “Normal Cost”) and an amortization schedule for the backlog.

- As part of the annual budget process, the budget should prominently display the level of required funding for maintenance “Normal Cost” and “Amortization”, and the impact of the budgeted funding should be displayed. This will provide a more transparent depiction of the impact of deferring maintenance.